Title: TRACKABLE OPTICAL DISCS WITH CONCURRENTLY READABLE

ANALYTE MATERIAL

Inventor: Mark O. Worthington
Docket No: BTI1 98100804(US)USX1P1X1

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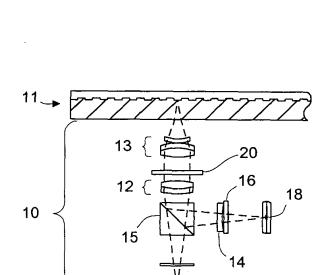


FIG. 1A

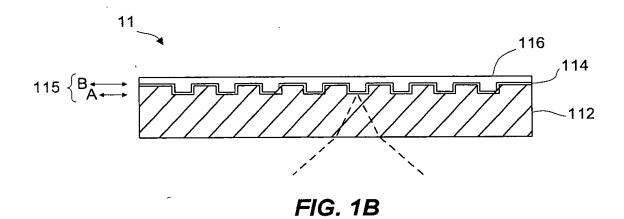
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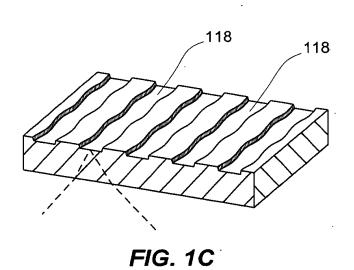
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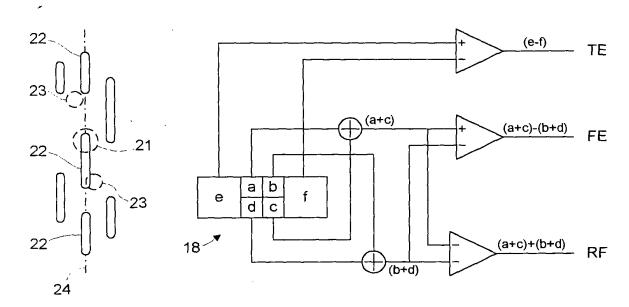


FIG. 2A

FIG. 2B

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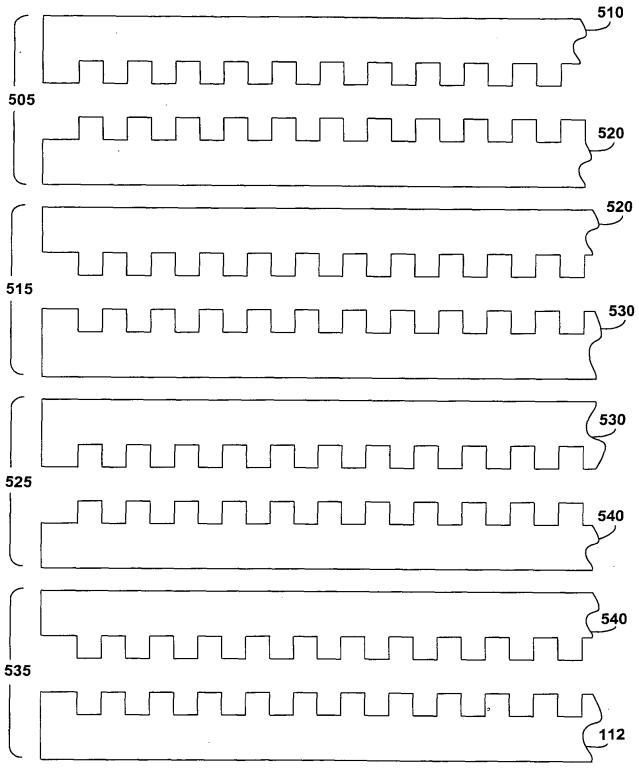
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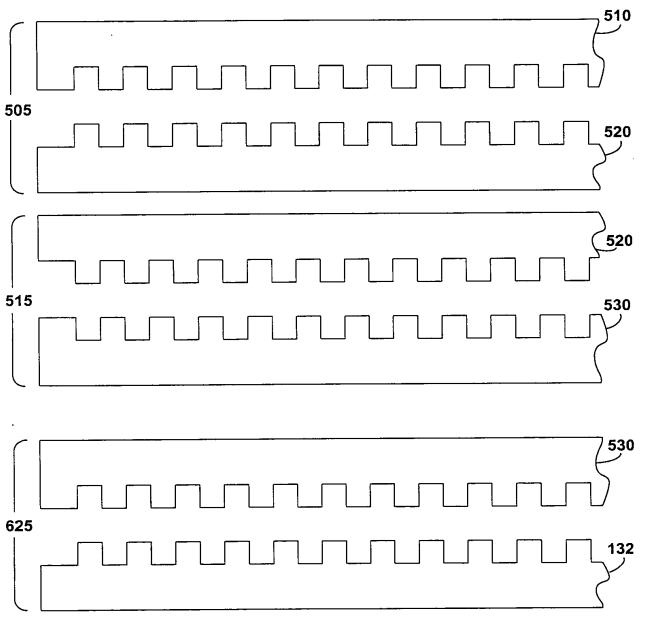
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FIG. 3B



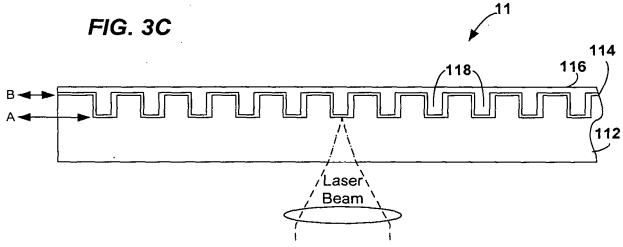
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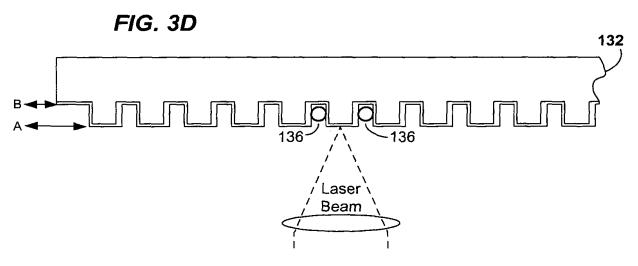
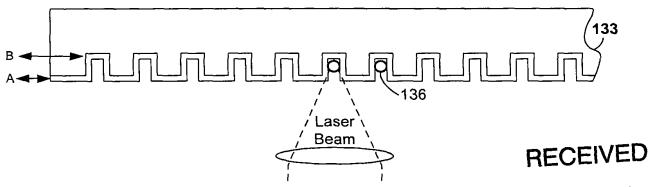


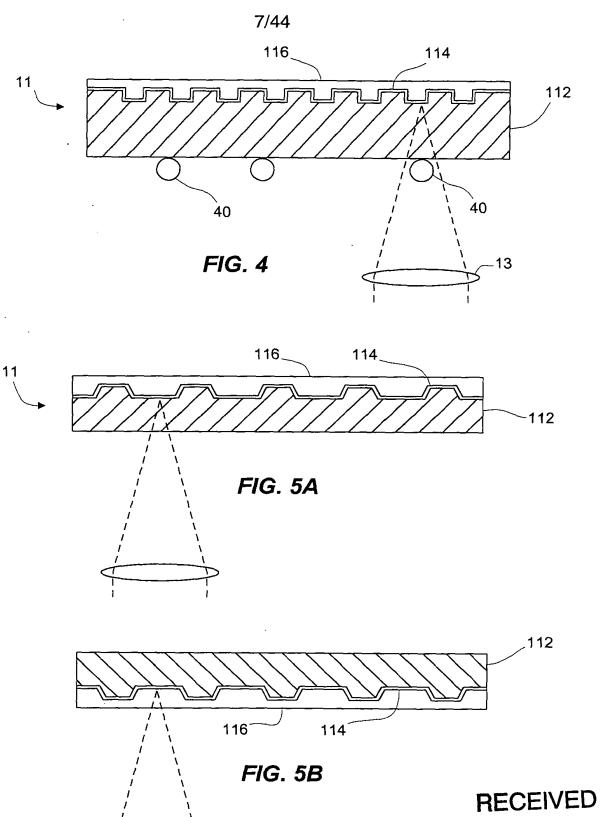
FIG. 3E



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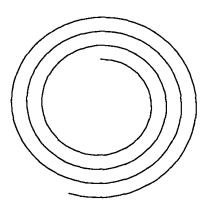


FIG. 5C

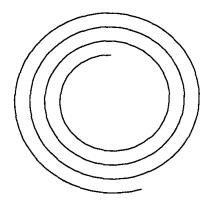


FIG. 5D

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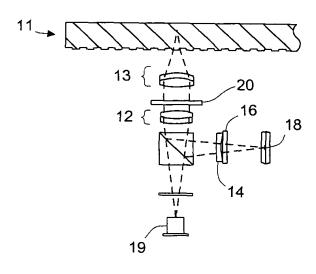


FIG. 6A

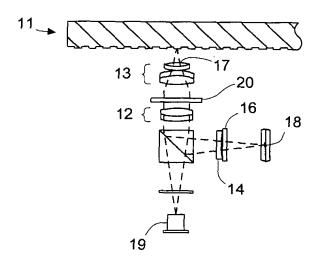


FIG. 6B

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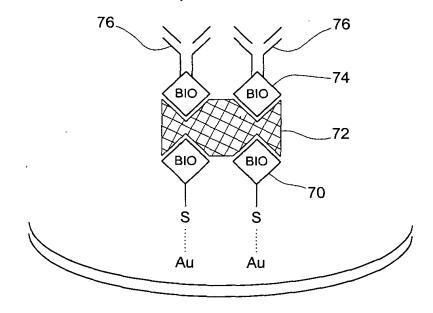


FIG. 7A

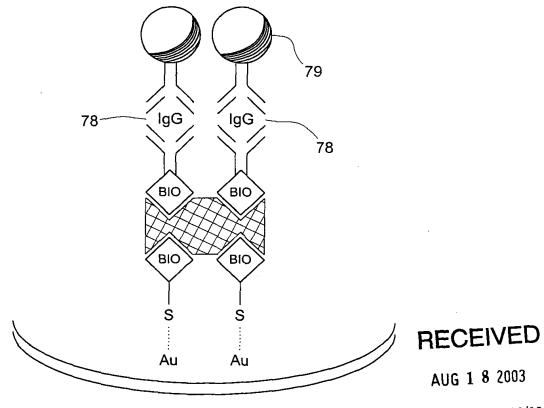
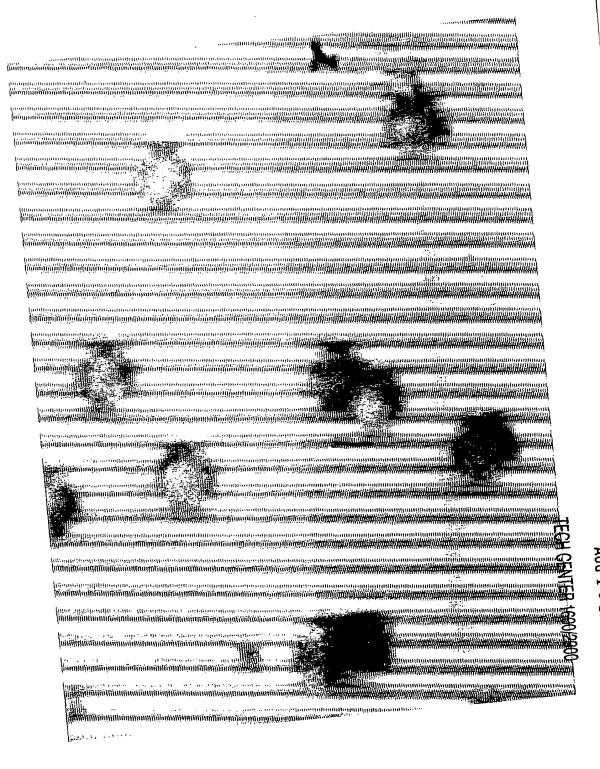


FIG. 7B



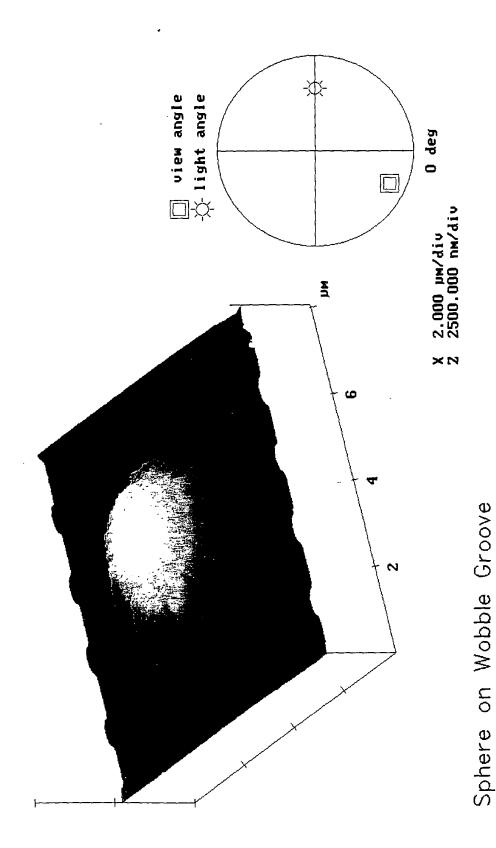
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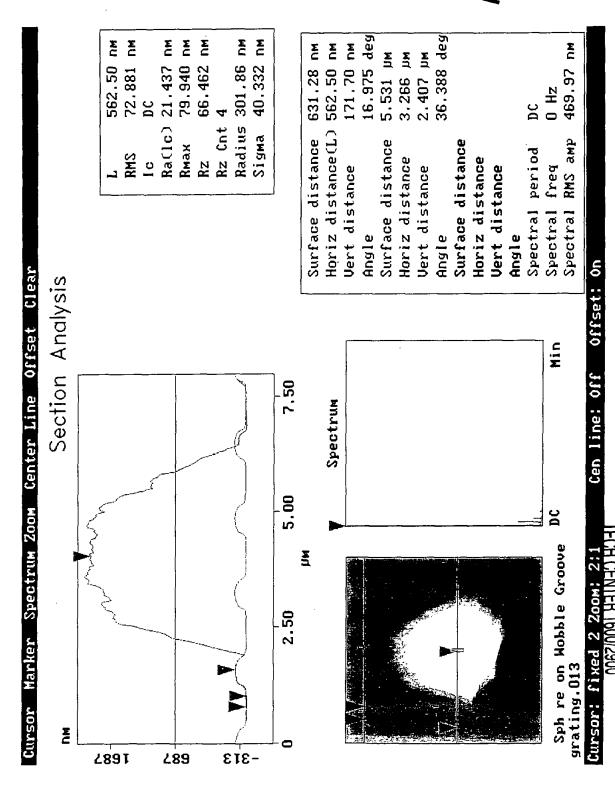


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FIG. 10

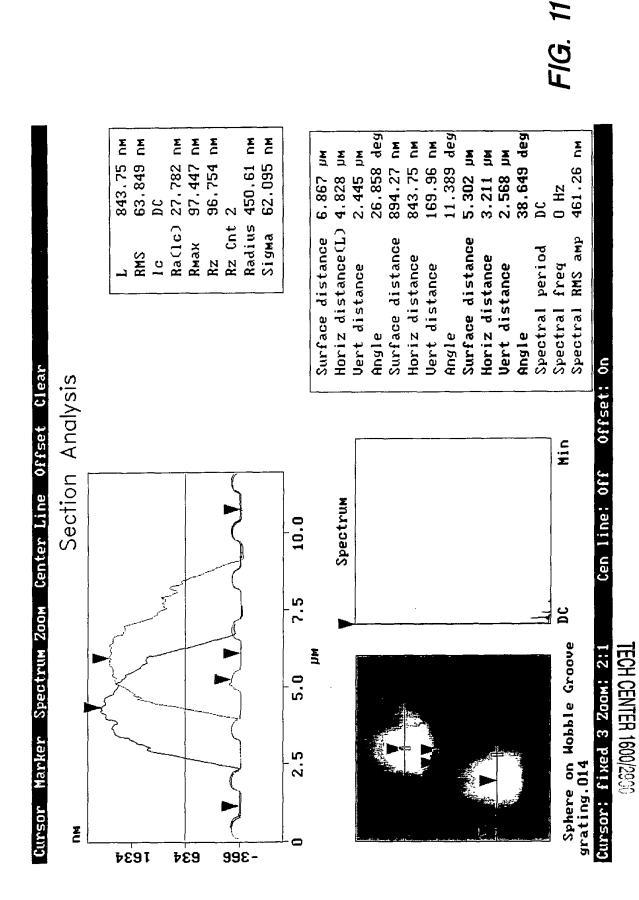


AUS 1 1 2003 S.

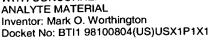
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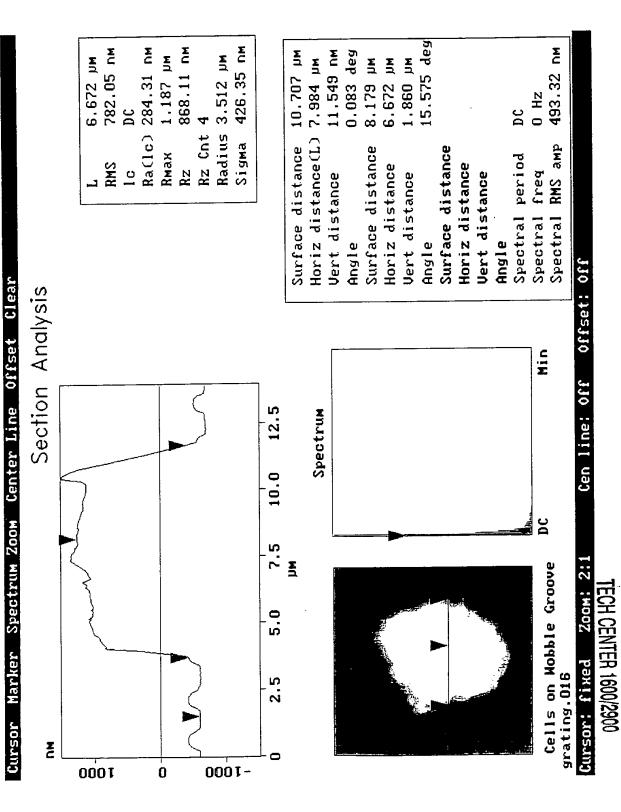


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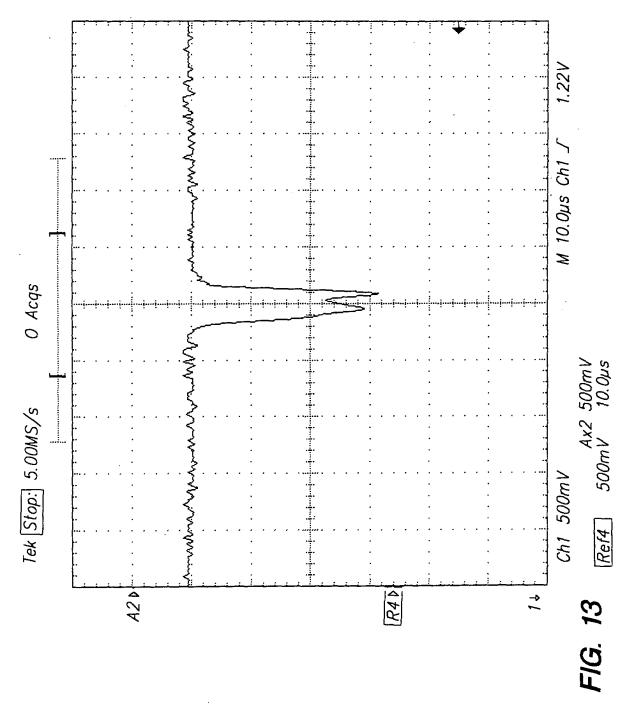


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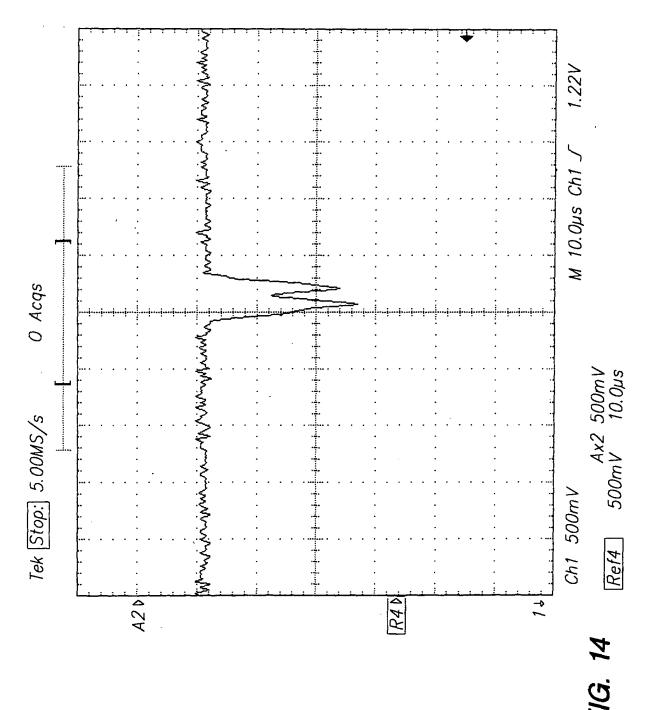
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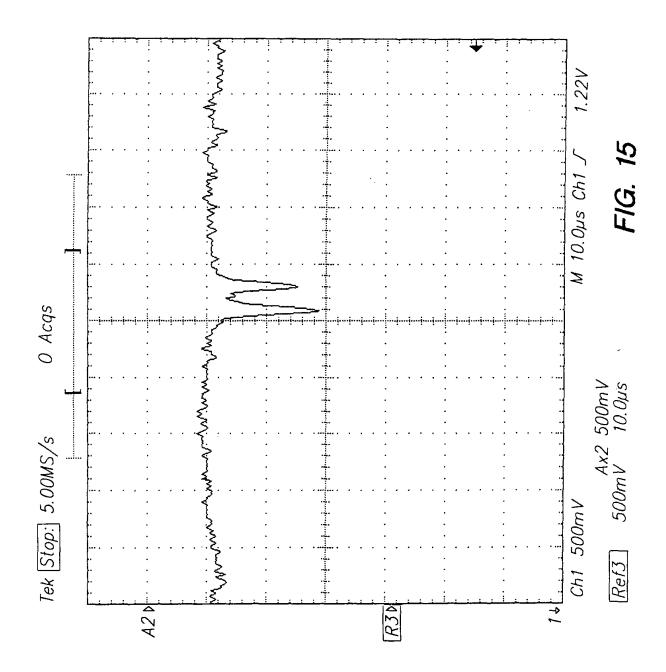
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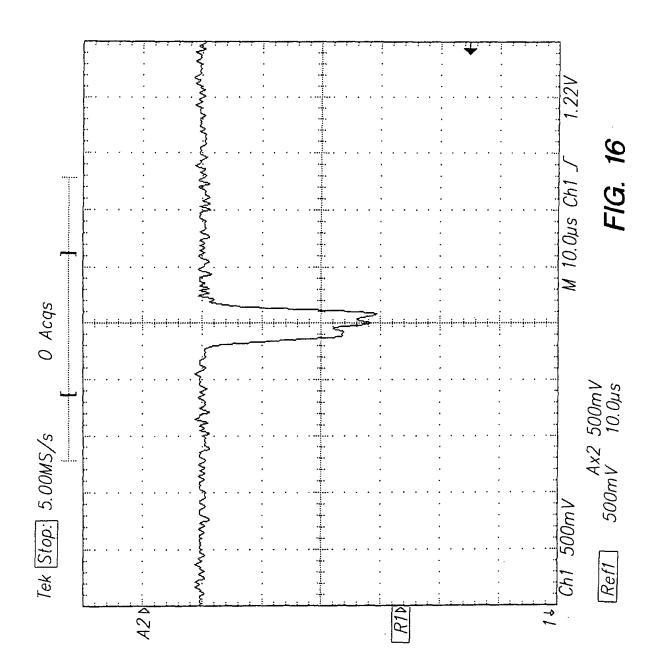
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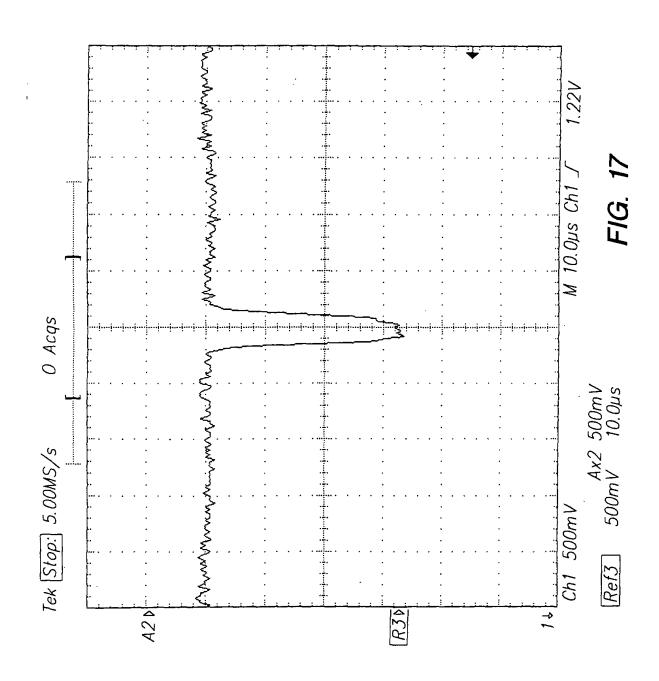
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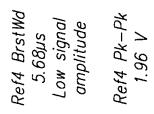
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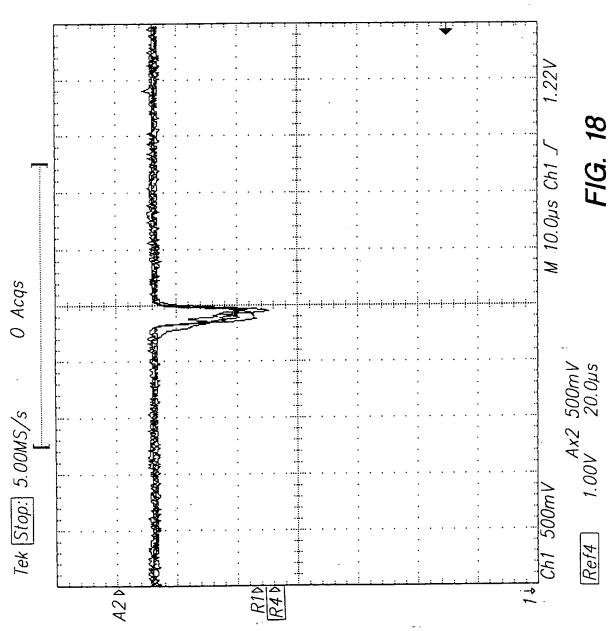
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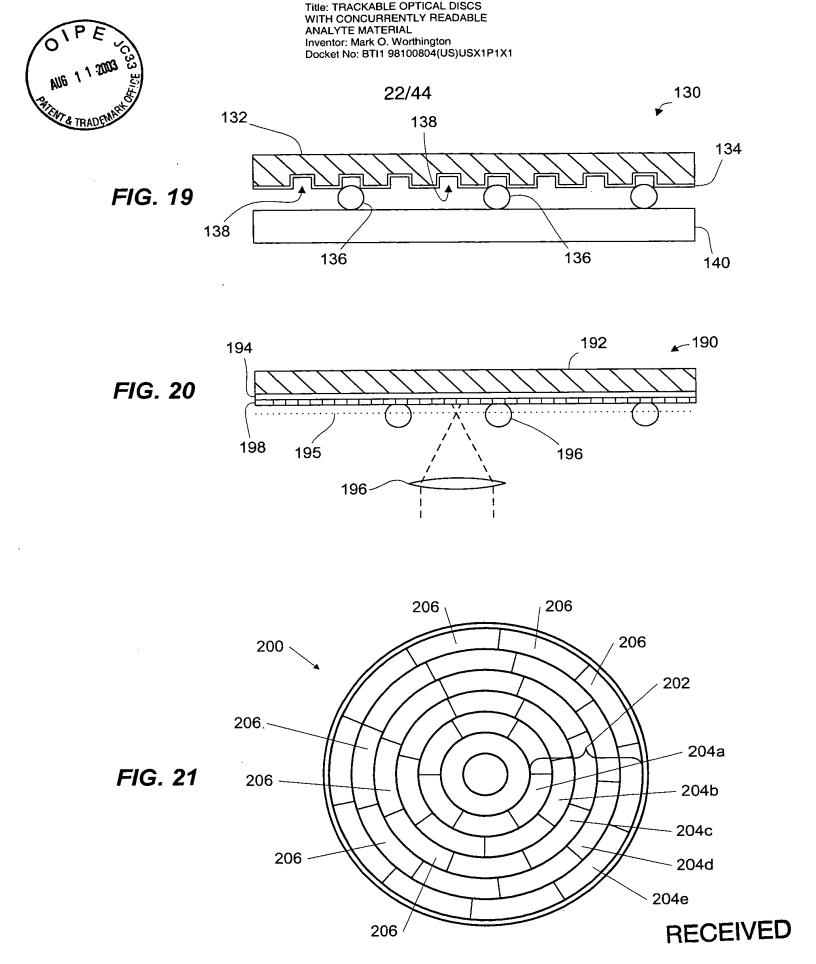
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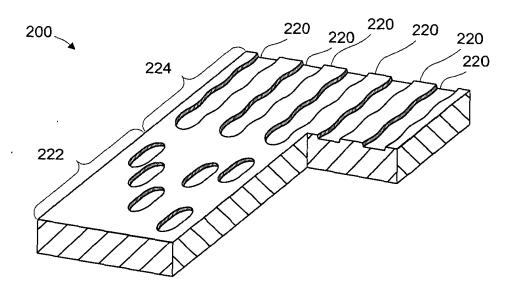


FIG. 22

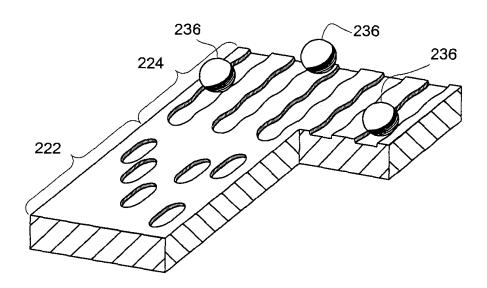


FIG. 23

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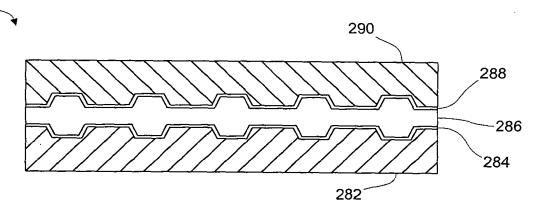


FIG. 24

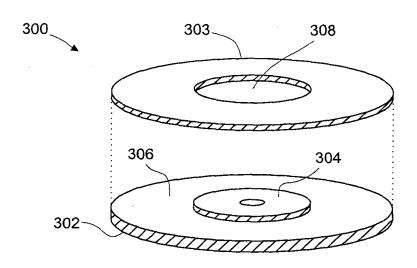
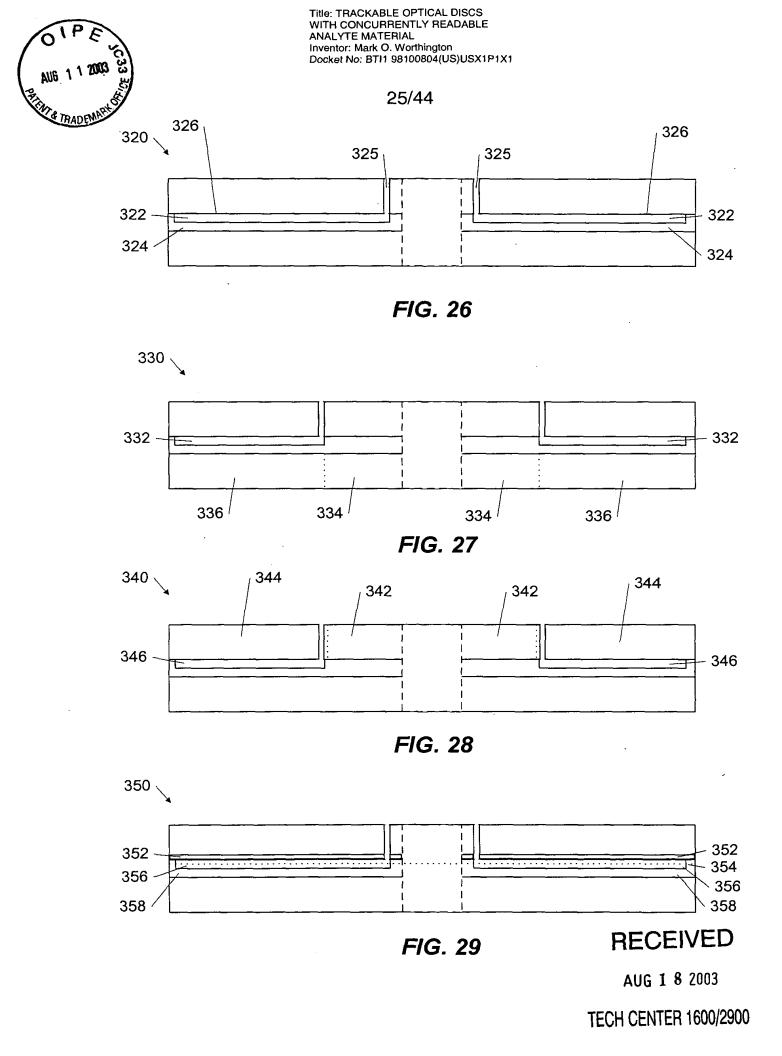


FIG. 25

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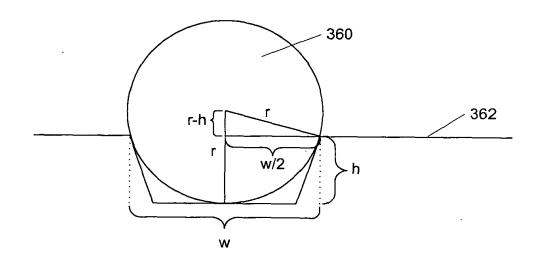


FIG. 30

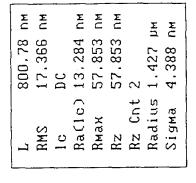
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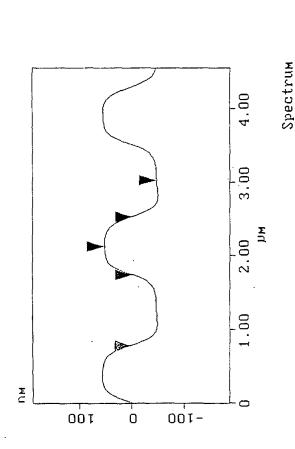


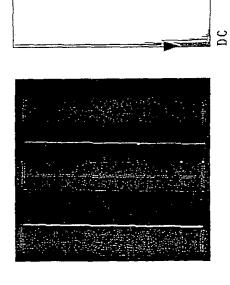
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Surface distance	912.31 пн
Horiz distance(L)	898.44 пм
Vert distance	100.00 nm
Angle	6,351 deg
Surface distance	969.10 пм
Horiz distance	957.03 NM
Vert distance	7.528 NM
Angle	0.451 deg
Surface distance	817.07 nm
Horiz distance	800.78 nm
Vert distance	О.740 ПМ
Angle	0,053 deg
Spectral period	DC
Spectral freq	0 Hz
Spectral RMS amp	4.523 NM





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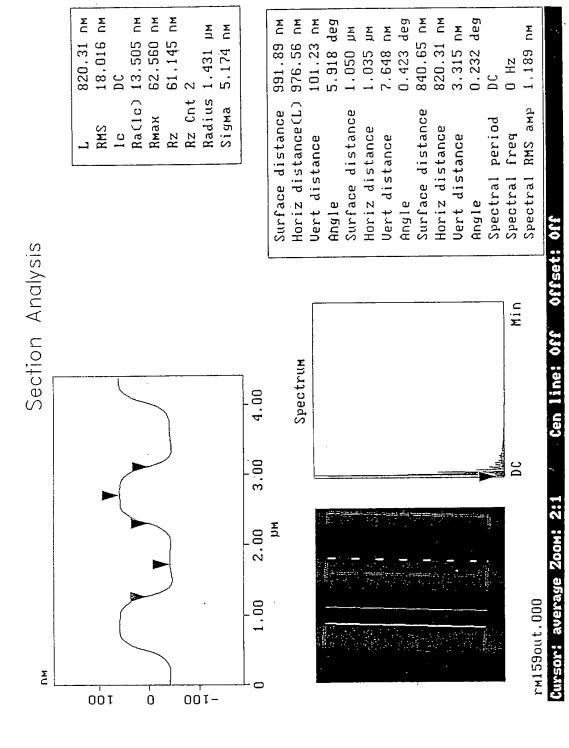
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Section Analysis

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Ĕ Ξ 21.794 пм 66.682 лм Radius 820.71 nm 8.514 NM 683.28 Ra(1c) 16.951 67.772 DС Rz Cnt Sідма Вмах RMS Rz] c

4.00

3,00

2.00

1.00

Ξ

107.52 nm 6.543 deg 0.220 deg 715.65 NM 683.59 пм 0.330 deg 937.50 NM 1.074 µm 3.943 пм 1.084 μΜ 4.127 nm 3.603 пм Horiz distance(L) Surface distance Spectral RMS amp Surface distance Surface distance Spectral period Horiz distance Horiz distance Spectral freq Vert distance Vert distance Vert distance Angle Angle Angle

Spectrum

DC Min

DC Min

Cursor: average Zoom: 2:1 Cen line: Off offs

F1G. 3.

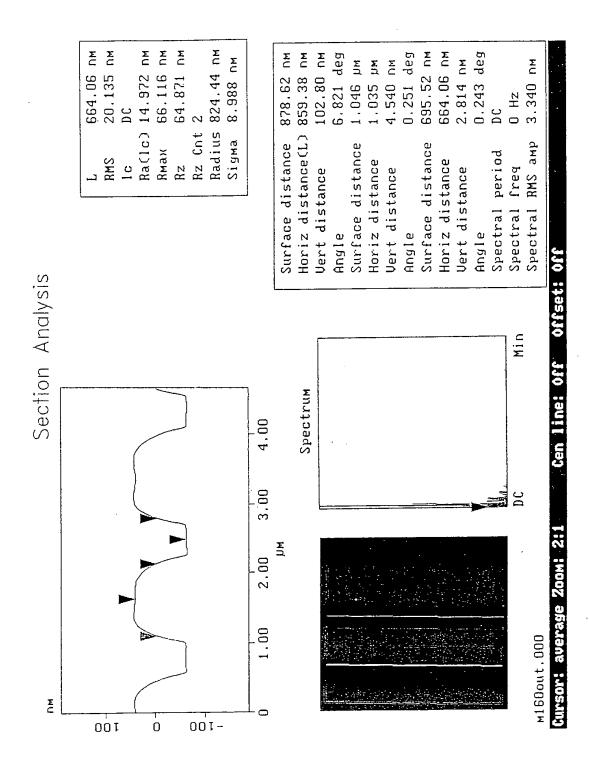
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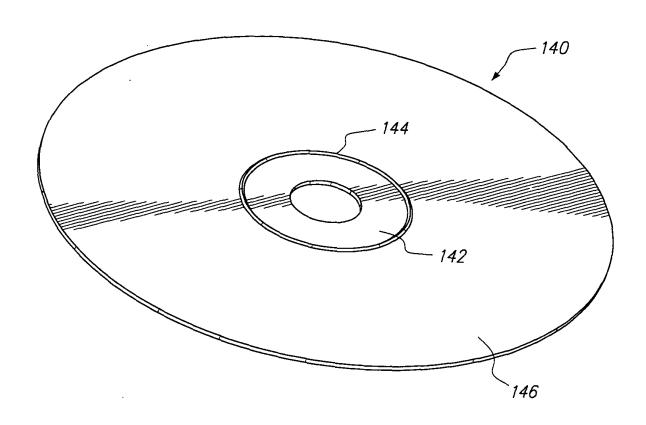


FIG. 35

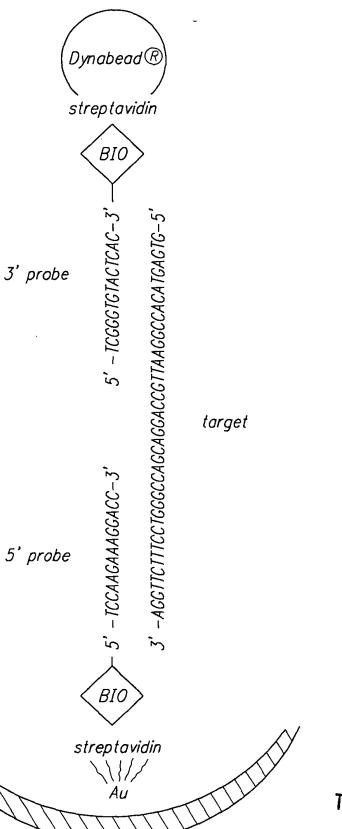
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FIG. 36



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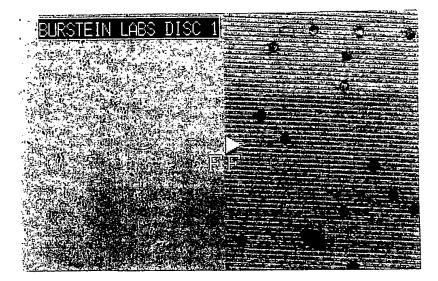


FIG. 37A
20 femtomoles

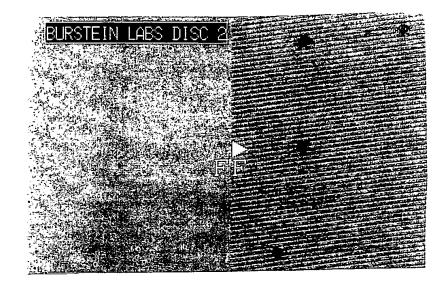


FIG. 37B
20 attomoles

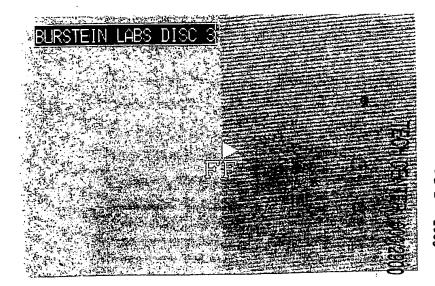
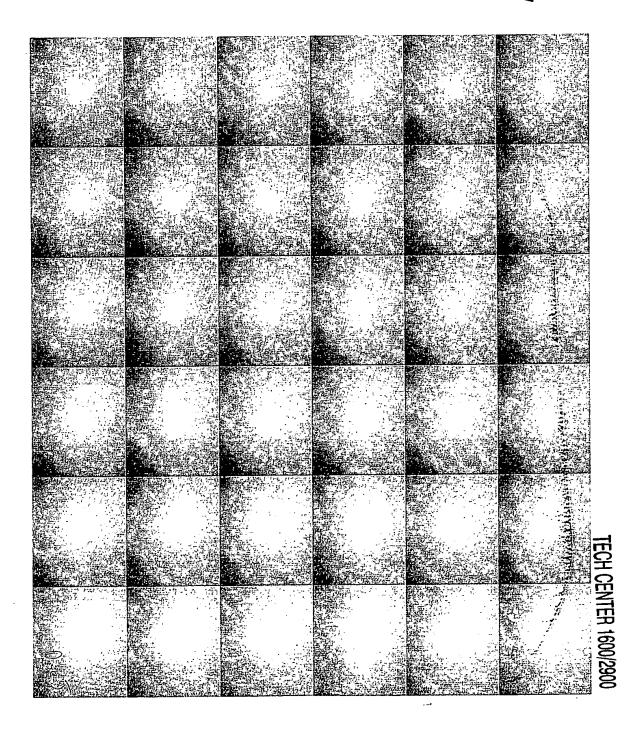


FIG. 37C
20 zeptomoles

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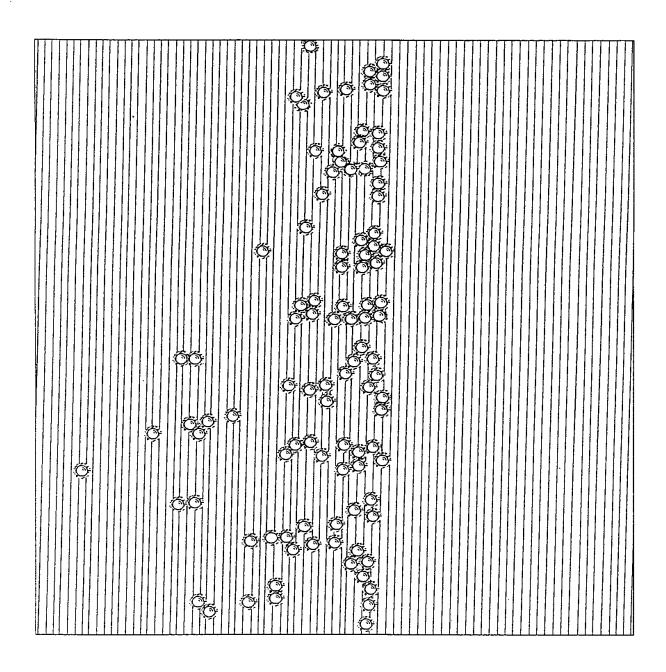


FIG. 39

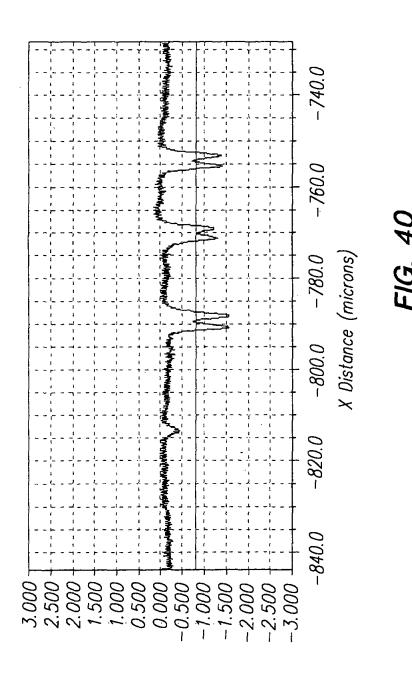
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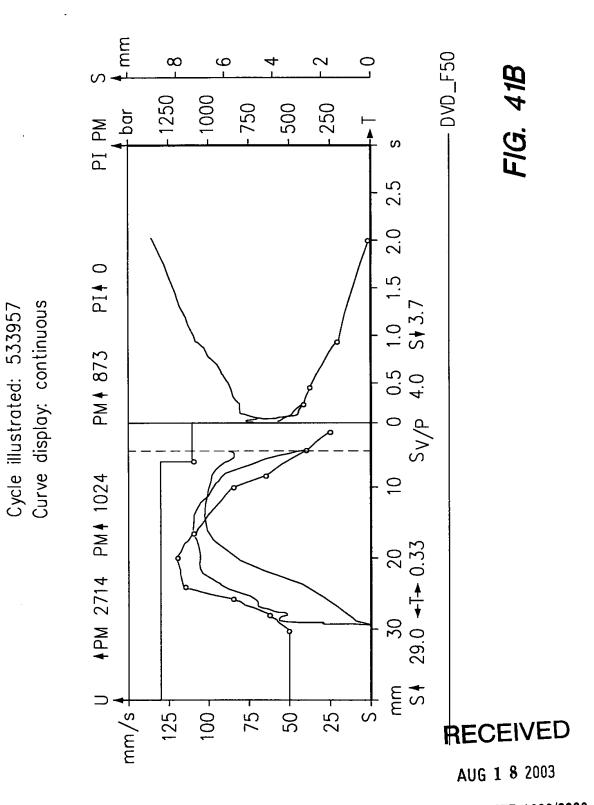
					3	37/44				
- 1		256	>>>	>>	>>>>	>>>				FIG. 41A
1011		Product Code No.		1/2	3 3 Center hole 3 Outer Edge	0. W W	1.462 0.33 0.876	0.162 0.7	7 - 2	3 5 6 7
	am hold vac + mech	lam dia. 24	Visual faults Streaks	Clouds	Black dots Matt outer edge Burrs	Scratches Diesel effect Brown Discoloration	Molding compound cold Thickness of cavity (3) Venting gap (5) Position of embosser (9)	Position of spure bush (10) Embossing stroke	<i>Measuring means</i> Polarized light Halogen light	Neon Light Black (UV Light) White paper Micrometer Balance
ווסות חכרבים וחו	-		270° 1.15 mm 1.155 mm	′-0.3 mm	45 60 15.26 15.26 15.26 15.26	Tol. -1/+3 -1/+3				
opiementary sneet, i	Agent	Customer)* 90* 180* 1.15 1.155 1.15 1.155 1.155 1.155) 15 30 15.26 15.27 15.26 15.26 15.26	DESIRED r./Min. 7 r./MIN. 7	with diff. tol.	Raw material Makrolon 2005 V	Lexan 1020 Panlite 5503	TECH CENT
inc i	o 36-10236	o 9N.96293	R15 1 R40 1		ri B B B	ACTUAL 9 It 6 It			>>>	TECH CENTER 1600/2900
AWM Muri	N dob	SM Order No	Dimensions 0'=mold at top Thickness	Center hole 15.0	Weight in g Measure every 1: during test Max. diff±0.1 g	<i>Water in mold</i> Sprue bush Embosser	<i>Vacuum</i> Handling Ram	Mold Function Embosser	Sprue ejector Ejector sleeve Sprue bush	Air outlet FS dia. BS dia.
	חכרבהוחורב ובאו	Job No 36–10236 Agent CR—R Ram hold vac + mech IFPI –	Job No 36–10236 Agent CR—R Ram hold vac + mech IFPI – IFPI – Irder No 9N.96293 Customer Eximpo CS Ram dia. 24	Job No 36–10236 Agent CR—R Ram hold vac + mech and v	Job No 36–10236 Agent CR—R Ram hold vac + mech of vac	Job No 36–10236 Agent of Secretary sneet, motor disceptance teast. Rom hold of vac + mech of gN.96293 Rom hold of vac + mech of secretary sneet, motor of secretary sneet. Rom hold of vac + mech of secretary sneets. Rom hold of vac + mech of secretary sneets. If A center hole of secretary sneets. If A center hole of secretary sneets. If A center hole of secretary sneets. If A stacking groove of sneet	Supplementary sneet, moid acceptance test	Supplementary Street, India acceptance test Job No 36-10236	Supplementary sheet, from a cocputation case, and a large of the lar	Supplementary Sheet, mind acceptance cash Sam hold Vac + mech Agent CR-R Ram hold Vac + mech Product Code 'No. 256



Graph 1. Injection - Holding pressure

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									•
01.01 Mold movement									1
Closing movement	\ 	33 =100%		Closing time	132	11	.000	•	
Pressure initiation	>>	V34 = 100%		11					
Opening movement	77	741 =100%		Opening time S41 = 055.0mm	T36	·	.000		
Braking	^	V42 =010%							
Pause time	14	T40 =000.000s	s00	Mold position	S640	II	075.		
Mold closing pressures Closing pressure Pressure Build-up	<u>9</u> . 9.	P682 =085% P681 =020%	% 2	T681 = 000.10s					
		C608 =	0 =	Switched off					
02.01 Summary of mold		auxiliary controls/robotics	s/robotics						
Enable removal		1680 =	= 0065.0						
Delays									
Blow off sprue Advance ejector pin		1602 = 153 = 155	= 000.03 = 000.10s	Sprue blowing time	T603	11	000.1		
Iransfer stroke forward Transfer Stroke return		156 156 =	= 000.15s = 000.15s	Extend removal	1668	Ш	000.2		
Embosser forward Blow on nozzle side		T62 = T75 = T75	= 001.20s = 000.50s	Embosser return Nozzle side blowina time	T63 T74	11 11	000.1 000.8		
Blow on moving side Unit Forward		T671 = T680 =		Moving side blowing time	171	li .	000.1		
		C683 =	00000 =	7683 = 000.00s	S 683	11	0004.		
ENTER	ECE ug 18	T11 = T640 =	= 009.05s = 000.70s					FIG. 41C	1C
	IVED								
יכ									I





		FIG A11	j
2776	01044		0.900
Н	11		11
n C125	P125		S102
0 mn		2 s	2 s
= 015.0 mm	ure	= 00.02 s	0.00
11	press	11	n
S122	Peak	T201	1201
018.2 mm		0 bar) bar
018.2		01300	0110
11		11	11
S121		P101	P102
ow number	essure monitoring	st stage	cond stage

03.01 Metering						
Screw retraction	C17 =	0	Switched off			
Metering Delay Metering stages	T20 = C124 =	000.50 s 2	Metering time T21	ii	005.9	
Metering end point	\$23 = \$24 =	026.0 mm 029.0 mm	P23 = 0060 bar P24 = 0010 bar	ZZ	N23 = N24 =	100 1. 020 1.
Holding pressure	P27 =	0010 bar	Start of injection	S	= 0S	029.0
04.01 Injection						
Enable injection	S682 =	0002.0 mm	Screw position	S641 =	029.0	
Injection values	C121 =	10	Start of injection	≅ 0S	029.0	
	×196 =	0050 mm/s	11			
	V197 =	0062 mm/s	11			
R E	V198 =	_	H			
	V199 =	0115 mm/s	11			
	V200 =	0120 mm/s	S200 = 019.8 mm			
	V201 =	0110 mm/s	11			
'E	V202 =	0085 mm/s	H			
:D	V203 =	0065 mm/s	S203 = 008.0 mm			
Enable V/P changeover	V204 =	0040 mm/s	11			
Forcible changeover	V205 =	0025 mm/s	H	12 ==	000.3	
			V/P changeover point	S11 ==	004.0	
Flow number	S121 =	018.2 mm	Ш	C125 =	2776	
Pressure monitoring				P125 =	01044	
First stage	P101 =	01300 bar	= 00.02 s		- - - - -	
Second stage	P102 =	01100 bar	= 00.02	S102 =	0.900	

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04.02 Holding pressure, cooling									
Holding pressure values	C122 P12	11 11	04 00550 bar	Changeover point	point	S11	П	0.400	
<u>:</u>	P117 P118 P119	11 11 11	00420 bar 00380 bar 00200 bar	1117 = 1118 = 1119 = 1120 = 1	000.20 000.40 000.90				
Holding pressure time Cooling time	139	11	005.30 s		002.00				
Melt cushion monitoring Upper limit	S219	H	010.0 MM	Melt cushion Lower limit	c	S19 S119	11 11	003.7 000.5	
05.01 Nozzles, unit, purging/dry cycles	cycles								
Standstill monitoring	9090	ii	60 min	C640 =	0004 min				
RECE AUG 1 S CH CENTER Drownoj tiun tiun	1680	11	000.70 s		030 %			•	
8 2003	130	II	000.30 s	V30 =	020 %				
Unit set-up and Branual movements Move forward VB	ents V816	II	030 %	Lift V806	= 030 %				
Purge/dry cycle/clean Number of metering strokes Metering Injection Delay for purging	C16 S16 S18 T606	II II II	20 028.0 mm 001.5 mm 000.00 s	C201 = P16 = V101 =	50 0060 bar 05 mm/s	N16	H	200	Ī

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06.01 Temperature contro	trol, plastifier z	zones/temperature	ture control	devices			
Zone/description	Set	Actual	Reduced	Tolerance		Heating	Cooling
	o d	ט פוסא		minus	snld	500	
10 Melt temperature	310°C	305°C	180° C	040°C	040° C		
30 Nozzle	330° C	330° C	180° C	•	040°C	014%	
13 Nozzle	315° C	315° C		040°C	040°C	025%	
Cylinder head	310°C	310° C	180° C	040°C	040°C	008%	
15 Compression	305°C	305°C	180° C	040°C	040°C	005%	
16 Compression	305°C 300°D	308 0	180°C	040 040	040	2000 2000	
18 reed 20 Inlet	090 090	090°C	080°C	040 040° C	040 C	%0/0	024
Zone/description	Set	Actual	Reduced	Tolerance	43	Heating	Cooling
	1 1 1 1 1	ש מחומ א		minus	snld	oathais	
24 Heating/cooling device	e 112° C	093°C	050°C	020°C	020° C	2000	000
OB O1 Disk tronsfer				2			
Peripheral interface	C684 =	0	Without	Without signal acknowledgement	nowledgen	nent	
Buffer switch-off size Production delay	C680 = T682 =		C605	0	, Š	ith interru	With interruption of cycle
ECH CENTER 1600/2900	IĒCH CENI	s 00.100					



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Production control							
	C340 = C315 =	2 100	No application				
	C303 =	-	Piece counter Cycle counter	C324 C325	= 29270 $=$ 29270	2,2	
	111 ==	009.05 s	Failure rate	C718	= 30.56%	29	
			Reason	C357	00 =		
statistics							
	C340 =	2	Monitoring without screenning out	out scr	eenning ou	+	
	c700 =	0	No report				
	cycles of C325 = C326 =	which 29270 29269	out of tolerance C318 = 8946 C338 = 8946		foilure rate C718 = C738 =	30.56% 30.56%	
	Set Point x	Tolerance +/-	Actual Value x	Mean	Scatter 3s	Out of Tolerance	rance
	1.20 30.1 0.47	0.30 2.0 0.20	5.98 s 29.0 mm 0.33s	2.32 28.6 0.39	5.408 0.82 0.105	-06786 2028 0	
•	5.5 5.2 8.2	0.1 0.0 0.0		3.8 8.0	0.04	0	
Ĉ.	0	700	0/1 bar 0 bar	700	99.9 0.0	00000-	Ç.
, 14	2500 3.90	300 0.50	2776 9.05 s	2441 5.08	99.9 6.421	359 -06570	7/G. 4
AKCK TO	^						
E Contraction of the contraction							



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	Tel I	
	重	
	9 ==	
	of the	
į	of	
	Configuration	
	0.02	

no reaction Reaction: Process data outside tolerance C703=0 Switch-off behavior

Q report intermediate store 10.03

DVD_F50 Manufacturer Machine No.

i. 41H	į	
F/G		
Job data	16.01 System characteristics	Mochine dota
Jop	16.01	Mochi

DVD_F50 CEL 10.31 23.10.1996 17106	
Order number IMC 12.26 Date created Version	
DISCJET 600/110 PAC 13.54 DB 05.80 350400	S90 = 160 mm
Machine data Machine type Control version Database version Special	Mold data Installed height

	Max metering stroke	Max. specific melt pressure	
024			
= 9080	032.0 mm	odr	0317 bar
Identification C806	S801 =	PB00=01482 bar	P801 ==
Plasticizing	Ram nominal diameter	Max. permissible melt pressure	Max: permissible backpressure

0024 100.0 01482 bor

C804 = S802 = P802 =

	FIG.		
Cooling		005	
Heating		2000	
Tolerance -/+	030° C 010° C	041° C 011° C	
Set point/actual value	$TH1 = 035 026^{\circ} C$	TH2 = 050 051° C	
Temperatures	Cabinet	0!0	